STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

REPORT OF EXAMINATION
TO APPROPRIATE PUBLIC WATERS OF THE STATE OF WASHINGTON

☐ Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

☒ Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
January 24, 1992	G2-28386		

NAME
Rainier View Water Company Inc

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
PO Box 44427	Tacoma	Washington	98444

PUBLIC WATERS TO BE APPROPRIATED

SOURCE
Well (Rosedale Heights #3)
TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE FEET PER YEAR
	45	61

QUANTITY, TYPE OF USE, PERIOD OF USE
61 Acre-feet per year — Municipal supply — Year-round, as needed

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION--WITHDRAWAL
Approximately 50 feet South and 660 feet East of the West quarter corner of Section 1.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
NW¼ SW¼	1	21	1E	15	Pierce

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)
A		Rosedale Heights Division #1

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

The area served by Rainier View Water Company. The place of use of this water right is the service area described in the Water System Plan approved by the Washington State Department of Health. RCW 90.03.386 may have the effect of revising the place of use of this water right if the criteria in section RCW 90.03.386(2) are met.

DESCRIPTION OF PROPOSED WORKS

One 6" X 400' deep well; constructed with 10 feet of screen from approximately 302 to 312 feet deep.

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE:	COMPLETE PROJECT BY THIS DATE:	WATER PUT TO FULL USE BY THIS DATE:
Started	Completed	In-use

REPORT

BACKGROUND:

On January 24, 1992, Rainier View Water Company (RVWC) filed an application (G2-28386) for a permit to appropriate public groundwater from a well in the amount of 100 gallons per minute (gpm). The well is part of the Rosedale Heights Water System. The project site is located on the Gig Harbor Peninsula in Water Resource Inventory Area 15 – The Kitsap Peninsula.

Notice of the proposed appropriation was published in *The Morning News Tribune* on June 1, 1992 and June 15, 1992 and no protests was received by Ecology

This application has been processed under the Department of Ecology (Ecology) Cost-Reimbursement Program, under agreement between Ecology and Golder Associates Inc. (Golder). Golder reviewed available documents pertaining to the City's application site conditions, historical water use, projected water demand, existing right-holders and seniority of pending applications potentially affected by the application.

INVESTIGATION:

Golder reviewed the information submitted with the application and pertinent Ecology records, including relevant geologic and hydrogeologic reports. Golder evaluated the potential effects of the proposed appropriation upon existing and senior groundwater and surface water rights. The findings of this evaluation are summarized below.

Project

The project site is located in Water Resource Inventory Area 15, which includes portions of Kitsap, Mason, King and Pierce County. The Rainier View Water Company operates several water systems on the Gig Harbor Peninsula.

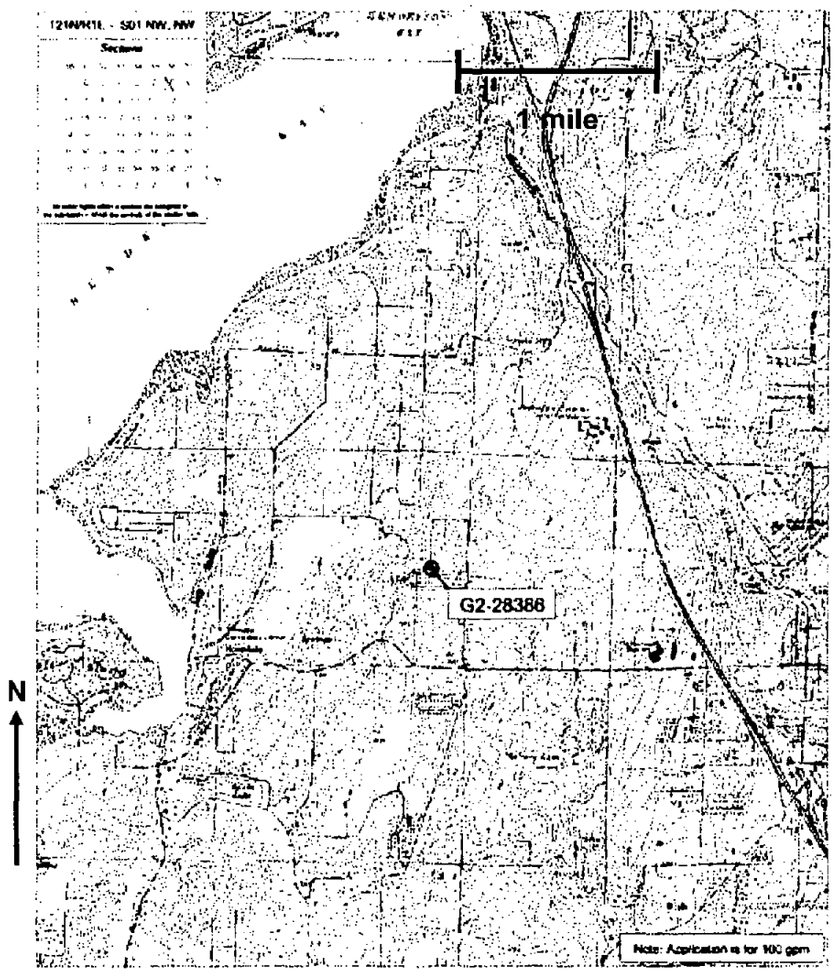
The Rosedale Heights water system is supplied water by three wells located on one parcel. The intent of this application is to secure additional water rights for RVW's Rosedale Heights Water System.

Withdrawals from Well 1 are authorized by ground water certificate 7251 which allows for the withdrawal of 100 gpm, and 21.5 acre-feet per year.

The system currently supplies 138 homes and is approved by the State Department of Health to serve 145 connections. In 2025 RVW anticipates supplying water to 250 connections.

Site Description

The site is located on the Gig Harbor Peninsula, in the NW ¼, SW ¼ Section 1, Township 21 North, Range 1 East (Figure 1). The well is referred to as Rosedale Well #3 and is operated by Rainier View Water Company (RVWC).



Hydrogeologic/Hydrologic Assessment

The Department of Ecology's water right track system was queried to determine existing water rights within the radius of influence of Rosedale Well #3. Well logs on file at Ecology were also examined to determine the hydrogeologic conditions in the vicinity of the water right application. Information on regional hydrogeologic data was obtained from the following resource material:

Borden, R.K. and Troost, K.G. 2001. Late Pleistocene Stratigraphy in the South-Central Puget Lowland, Pierce County, Washington. Washington Division of Geology and Earth Resources Report of Investigations 33, Washington State Department of Natural Resources.

Drost, B. W. 1982. Water Resources of the Gig Harbor Peninsula and Adjacent Areas, Washington, U.S. Geological Survey.

EMCON. 1992. Gig Harbor Peninsula Ground Water Management Plan Task 5 Hydrogeologic Evaluation Report.

Garling, M. E., Dee Molenaar, and et al. 1965. Water Resources and Geology of the Kitsap Peninsula and Certain Adjacent Islands, State of Washington, Department of Conservation, Washington Division of Water Resources.

Golder Associates. 2002. Phase II Level I Data Compilation and Preliminary Assessment Report. Redmond, Washington.

Golder Associates. 2003. Kitsap Watershed Planning (WRIA 15) Water Quality Technical Assessment. Redmond, Washington.

Golder Associates. 2004. Kitsap Watershed Planning (WRIA 15) Instream Flow Assessment Step C Final Report. Redmond, Washington.

Jones, M. A. 1996. Thickness of Unconsolidated Deposits in the Puget Sound Lowland, Washington and British Columbia, a Contribution of the Regional Aquifer-System Analysis Program. Tacoma, Washington: U.S. Geological Survey.

Kahle, S. C. 1998. Hydrogeology of Naval Submarine Base Bangor and Vicinity, Kitsap County, Washington, U.S. Geological Survey.

Noble, J. B. 1990. Proposed Revision of Nomenclature for the Pleistocene Stratigraphy of Coastal Pierce County, Washington, Washington Division of Geology and Earth Resources.

The Gig Harbor Peninsula is located in northwestern Pierce County, at the southern end of the Puget Lowland, within WRIA 15 (Kitsap Basin). The Gig Harbor Peninsula is part of the extensive glacial drift plain comprising the Puget Lowland, which was formed by at least six glaciations that occurred in the region during the last 2 million years (Kahle, 1998). The Gig Harbor Peninsula is connected to the larger Kitsap Peninsula and is surrounded on three sides by marine embayments. A complex sequence of unconsolidated and semi-consolidated sediments comprise the Gig Harbor Peninsula. The sediments include advance and recessional glacial deposits, and fluvial and lacustrine interglacial sediments. The total thickness of the sedimentary sequence on the Peninsula ranges between 1,200 and 2,000 feet (Jones, 1996). The sediments are underlain by Miocene volcanic and sedimentary bedrock (Garling et al., 1965).

Garling et al. (1965) describes a typical glacial sequence on the Gig Harbor Peninsula as consisting of the following units, listed from youngest (top) to oldest (bottom):

- Recessional outwash (a discontinuous mantle of sand and gravel overlying the till; often found on hilltops);
- Till (normally a gray to bluish-gray compact and unsorted mixture of cobbles and pebbles in a binder of sandy silt and clay); and

- Advance outwash (primarily consists of gravels and coarse sands capped by the overlying till).

Groundwater on the Gig Harbor Peninsula is primarily produced from three aquifers, referred to as the Vashon, Sea Level and Deep Aquifers. The geologic units comprising the aquifers are outlined below after EMCON (1992) and Borden and Troost (2001):

- Vashon Aquifer: Vashon recessional outwash, till, advance outwash/glaciolacustrine silt/clay (Lawton Clay)/Olympia beds/Pre-Olympia drift. Water table conditions exist in much of the Vashon Aquifer. The water level in the advance outwash generally mimics surface topography;
- Sea Level Aquifer: Salmon Springs Drift/Double Bluff Drift. The Sea Level Aquifer is characterized by a low elevation potentiometric surface (up to 135 feet above mean sea level); and
- Deep Aquifer: Permeable layers within the pre-Salmon Springs deposits. At least two productive zones have been identified as comprising the Deep Aquifer. Water level data for the Deep Aquifer is sparse, but several water level measurements indicate that the potentiometric surface is generally less than 100 feet amsl. The extent and configuration of the deep aquifer(s) is poorly understood.

All three aquifers are confined where the unit is fully saturated and overlain by a low permeable unit, however water table conditions have been observed in the Vashon Aquifer (Garling et al., 1965). Shallow, perched groundwater zones exist in several locations on the peninsula where lenses of sand and gravel occur within lower permeable material. Water levels in the perched groundwater zones are slightly higher than those in the Vashon Aquifer. Table 1 provides a summary of the hydrostratigraphy of the Gig Harbor Peninsula. EMCON (1992) developed hydrogeologic cross-sections showing the extents of the three aquifers. The cross-sections show that the Vashon Aquifer is continuous across much of the Gig Harbor Peninsula, with the exception of the deeply incised area such as Wollochet Bay and Gig Harbor. The Sea Level Aquifer is present throughout the Gig Harbor Peninsula. Borehole information for the two permeable units comprising the Deep Aquifer is very limited, and the lateral extents of the Deep Aquifer are not known (EMCON, 1992).

The peninsula is drained by multiple small streams that discharge directly to marine water. Annual precipitation on the Gig Harbor Peninsula ranges from 40 to 52 inches/year (in/yr) (Golder 2002). Precipitation on the Peninsula infiltrates into the ground, runs off to streams, or is lost to evapo-transpiration. It is estimated that between 13% (Drost 1982) and 18% (Golder 2004) of precipitation is available for groundwater recharge (after contribution to baseflow is made).

The water that infiltrates the ground flows vertically downward to recharge the three aquifers found beneath the Peninsula. Recharge to the Deep Aquifer may come from areas outside of the peninsula. Horizontal flow directions of groundwater within aquifers is generally from areas of higher head to areas of lower head. Drost (1982) cites a generally downward component to groundwater flow on the Peninsula, with groundwater generally flowing toward marine water bodies and to surface drainage channels.

Hydrologic Analysis

Rosedale Well #3 was drilled to a depth of 400 feet below ground surface (bgs) in 1990 by Richardson Well Drilling Co. The wellhead elevation is approximately 320 feet amsl. Rosedale Well #3 is screened with 20-slot stainless steel well screen between 302 and 312 feet bgs (approximately 8 to 18 feet amsl).

The well is removing water from the upper third of the Sea Level Aquifer. The thickness of the Sea Level Aquifer in the vicinity of Rosedale Well #3 is thought to be over 100 feet (EMCON, 1992). A well log for Rosedale Well #3 indicates drilling through 164 feet of sand and gravel, with some clay (alluvium and Vashon advance outwash) followed by 26 feet of clayey gravel and sand (Qpon). The borehole was terminated at 400 bgs in sandy clay ($Qpog_2$). The static water level at time of drilling was 180 feet bgs, indicating confined aquifer conditions. Rosedale Well #3 was airlift tested following drilling and yielded 50 gpm, with 120 feet of drawdown after 1 hour.

Rosedale Well #3 is located near a potentiometric high in the Sea Level Aquifer and groundwater flow in the vicinity of the well is likely to the west toward Henderson Bay. The hydraulic gradient in the vicinity of Rosedale Well #3 measured from the potentiometric surface map prepared by EMCON (1992) is between 0.022 and 0.032.

Neighboring Water Users

Water rights and well logs for wells completed in the Sea Level Aquifer were examined in order to determine if pumping in Rosedale Well #3 would impair other water right holders. There were no wells with water rights identified as being completed in the Sea Level Aquifer within a ½-mile radius of Rosedale Well #3. A radius of a ½-mile was selected for a search radius based on aquifer properties.

Two wells with water rights within a ½-mile radius of Rosedale Well #3 were identified as being completed in the Vashon Aquifer. There were no water rights identified for wells completed in the Deep Aquifer within a ½-mile radius of Rosedale Well #3. Wells completed in the Vashon Aquifer within a ½-mile radius of Rosedale Well #3 are not likely to be impacted by withdrawals in Rosedale Well #3. The well log for Rosedale Well #3 indicates that there is clay with varying amounts of sand and gravel between 125 and 243 feet bgs. This low permeability unit above the Sea Level Aquifer likely prevents direct communication with the shallower aquifer. Therefore, certificated water right holders will not be prevented from withdrawing their allotted amounts of water as a result of pumping in Rosedale Well #3.

Effects to Surface Water

Minimum instream flows were established in 1981 through *Chapter 173-515-040 WAC, the Instream Resources Protection Program for the Kitsap Water Resource Inventory Area (WRIA) 15.* Any groundwater withdrawals with priority dates later than the closure dates stated in the WAC must not impair instream flows. Pumping in Rosedale Well #3 is likely to have no impact to surface waters. The well log indicates that the elevation of the screened interval of the well is 8 to 18 feet above mean sea level (amsl). Additionally, the log indicates that there is clay with varying amounts of sand and gravel between 125 and 243 feet bgs. This material likely prevents hydraulic connection between the Sea Level Aquifer and aquifer layers above them.

Because of the wells depth and the presence of low permeability units above the screened interval, it is unlikely that Rosedale Heights Well #3 has a hydraulic connection with surface water. Existing information on groundwater flow gradients in the Sea Level Aquifer also indicate that groundwater discharge is primarily to salt water bodies.

Seawater Intrusion

Given the coastal nature of the Gig Harbor Peninsula, seawater intrusion is always a potential concern, not just for Rosedale Well #3 but for other wells that may be completed downgradient in the Sea Level and deeper aquifers. Rosedale Heights Well #3 has been in operation for over nine years and sampling includes regular monitoring of chloride levels. Historical monitoring of this particular well has not detected any elevation of chloride levels above background level.

Water Allocation/Demand Forecasting

Rosedale Well #3 is part of an existing Class A water system that currently supplies water to 144 connections. There are two wells on the system and ground water certificate 7251-A issued for 100 gpm and 21.5 acre-feet per year for community-domestic supply authorizes withdrawals from Rosedale Well #1.

The system currently supplies 138 homes and is approved by the State Department of Health to serve 145 connections. The intent of this application is to secure additional water rights for the Rosedale Heights system. In 2025 RVW anticipates supplying water to 250 connections.

Given an annual average water duty of 300 gallons per day (0.33 acre-feet/year) per connection, a total of 83 acre-feet would be needed within the next 20 years. Since, existing Ground Water Certificate No. G2-09849C provides for 21.5 acre-feet per year for the same service area, the additional water requirement for 250 connections is 61 acre-feet per year.

As Well 3 is currently equipped to produce 45 gpm; I recommend that withdrawal rate be maintained, with the allocation of an additional 61 acre-feet per year.

The legal description of the property on which the water is to be used, as shown on the application, is the "Area serviced by Rainer View Water Company". However, with the passage of 2E2SHB 1338 – known as the 'Municipal Water Law', changes to the water code mean that the purveyor's place of use will be governed by the service area designated in an appropriate Water System Planning document. Pursuant to updates to RCW 90.03, the RVWC water system is designated as a municipal water system.

FINDINGS AND CONCLUSION:

- Rosedale Heights Well #3 is located on the west central portion of the Gig Harbor Peninsula, in the NW ¼, SW ¼ Section 1, Township 21 North, Range 1 East. The well is completed in the Sea Level Aquifer system.
- Given the depth of Rosedale Well #3 and the low permeability material above the Sea Level Aquifer, withdrawals are not expected to impact wells completed in the Vashon Aquifer. No wells completed in the Deep Aquifer were identified within a ½-mile of Rosedale Well #3.
- While the well is located within WRIA 15, which is regulated by WAC 173-515-040, it is unlikely that this withdrawal will affect surface water bodies in the basin. This well is completed in an aquifer system that discharges to the Puget Sound, and is not in hydrologic continuity with other surface waters in the basin. The well is completed above sea level, but the well log indicates the presence of the low permeability unit above the screened interval.
- This appropriation is for a beneficial use, and will not impair existing rights or be detrimental to public welfare.

RECOMMENDATIONS:

I recommend that this application be approved and a permit be issued to allow maximum instantaneous appropriation of 45 gallons per minute from Rosedale Well #3, and 61 acre-feet per year for municipal supply. The period of use is year-round as needed.

This permit is subject to the following provisions.

PROVISIONS:

An approved measuring device shall be installed and maintained for each of the sources identified by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use", Chapter 173-173 WAC.

Water use data shall be recorded monthly. The maximum rate of diversion/withdrawal and the annual total volume shall be submitted to Ecology by January 31st of each calendar year.

Chapter 173-173 WAC describes the requirements for data accuracy, device installation and operation, and information reporting. It also allows a water user to petition Ecology for modifications to some of the requirements. Installation, operation and maintenance requirements are enclosed as a document entitled "Water Measurement Device Installation and Operation Requirements".

Department of Ecology personnel, upon presentation of proper credentials, shall have access at reasonable times, to the records of water use that are kept to meet the above conditions, and to inspect at reasonable times any measuring device used to meet the above conditions.

Permittee or certificate holder, and its successor(s) shall provide data on chloride concentrations for the well authorized by this permit or certificate with analysis performed by a state accredited laboratory. Accreditation information may be obtained from Ecology's Quality Assurance Program at (360) 895-4649. Sampling shall occur in April and August of each year, with a copy of the laboratory results for both sampling events submitted by January 31 of the following year, to the Department of Ecology, Southwest Regional Office, Olympia, Washington.

If pumping of the well authorized by this permit or certificate causes chloride concentrations to exceed 100 milligrams per liter, immediate action shall be required to prevent concentrations from increasing (such as reducing the instantaneous withdrawal rate (gpm) of the well). If corrective measures fail to prevent chloride concentrations from exceeding said level in the future, permittee or certificate holder shall relinquish the option to perfect additional allocated quantities regardless of the stage of development.

Issuance of this water right is subject to the implementation of the minimum requirements established in the Conservation Planning Requirements, Guideline and Requirements for Public Water Systems Regarding Water Use Reporting, Demand Forecasting Methodology, and Conservation Programs, July 1994, and as revised.

Under RCW 90.03.005 and 90.54.020(6), conservation and improved water use efficiency must be emphasized in the management of the State's water resources, and must be considered as a potential new source of water. Accordingly, as part of the terms of this water right, the applicant shall prepare and implement a water conservation plan approved by Department of Health. The standards for such a plan may be obtained from either the Department of Health or the Department of Ecology.

The Water Resources Act of 1971 specifies certain criteria regarding utilization and management of the waters of the state in the best public interest. Use of water may be subject to regulation at certain times, based on the necessity to maintain water quantities sufficient for preservation of the natural environment.

REPORTED BY: Jill Ewald Date: October 7, 2004

The statutory permit fee for this application is $20.00.

FINDINGS OF FACT AND DECISION

Upon reviewing the above report, I find all facts, relevant and material to the subject application, have been thoroughly investigated. Furthermore, I find water is available for appropriation and the appropriation as recommended is a beneficial use and will not be detrimental to existing rights or the public welfare.

Therefore, I ORDER a permit be issued under Ground Water Application Number G2-28386, subject to existing rights and indicated provisions, to allow appropriation of public ground water for the amount and uses specified in the foregoing report.

Signed at Olympia, Washington, this 7th day of October, 2004.

Thomas Loranger
Water Resources Section Manager
Southwest Regional Office